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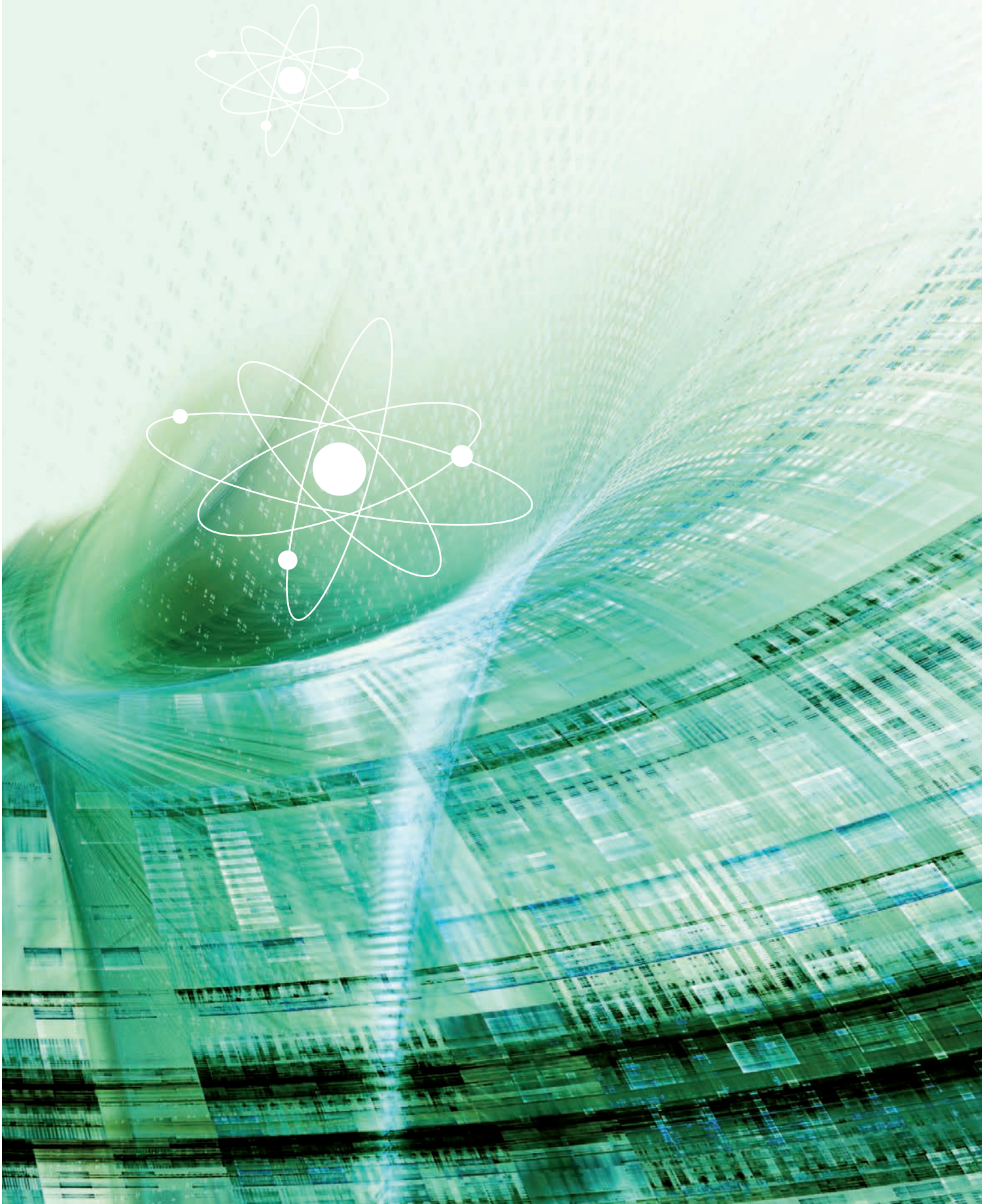
JAVYS OPERATION
ENVIRONMENTAL IMPACTS REPORT
2012

CONTENTS



INTRODUCTION

2012 Environmental impacts report provides comprehensive information about air pollution protection, water and waste management, prevention of major industrial accidents, environmental impact assessment activities (EIA) and environmental protection related activities undertaken by JAVYS.

The goal and mission of JAVYS - to apply environmental friendly approach and environmental protection, is taken into account in its all activities; the company applies the certified environmental management system in accordance with the „Environmental Management Systems" ISO 14001:2004 standard.

Environmental protection requirements defined both in Slovak and EU legislation, as well as the obligation to observe the limits and terms stipulated in decisions governing environmental protection issued by the state and supervisory authorities are translated to all JAVYS activities.

Therefore, within this process approach, environmental protection is crucial for integrated management system processes.

AIR PROTECTION

In regards to air protection, JAVYS observes the key legislation – the Air Act No.137/2010 Coll.on Air as amended, as well as all related laws, regulatory decrees and regulations of the Government of the Slovak Republic.

The decisions issued by the relevant state and supervisory air protection authorities – DistrictEnvironmental Office in Trnava and Piešťany, Slovak Environmental Inspection in Bratislava, Municipality Office in Trnava, define the air pollution sources operation method, issue the permit for source operation, and define the emission monitoring system and the discharged pollutants limits.

AIR POLLUTION SOURCES

JAVYS operates major, medium as well as small air pollution sources.

Auxiliary boiler plant (NaRK)	major source
LOOS boiler located in NaRK building	medium source
Gas boiler room	medium source, owned by the company JESS, a.s.
BR WTC Incineration facility	medium source
Infrared emitters in FCC production unit in Trnava	medium source
Diesel generators V1	medium source
Diesel generator in FCC production unit in Trnava	small source
Diesel generator ISFS	small source
Gas appliances (boilers) in FCC production unit in Trnava	small source
Fiber-concrete mixture production in FCC production unit in Trnava	small source

* The company JAVYS operates BR WTC incineration of radioactive waste that is not categorized as the air pollution source; it belongs among nuclear installations.

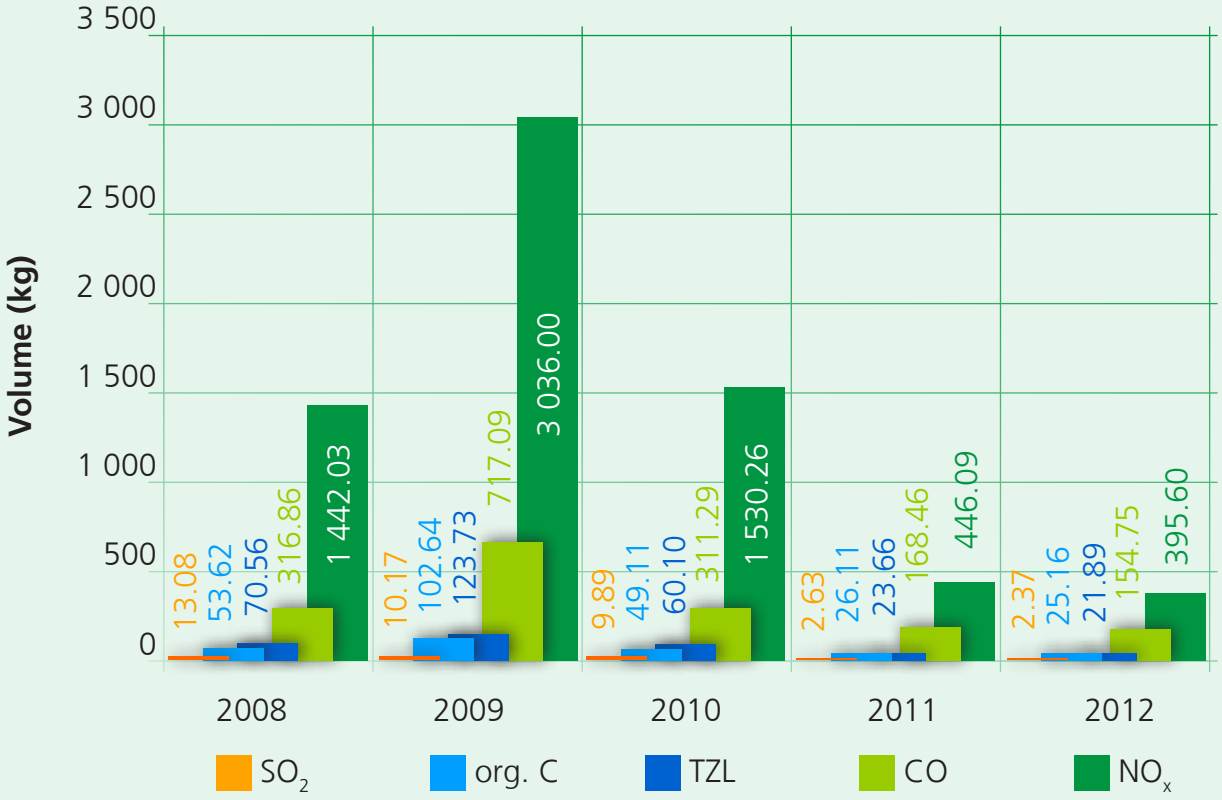
Volumes of air pollutants released from sources during 2012

SOURCE	Fuel	Pollutant (kg)				
		TZL	SO_2	NO_x	CO	C_{org}
	Natural gas (m^3)					
NaRK	26,697	2.03	0.24	44.64	14.96	1.90
Boiler LOOS	11,443	0.87	0.10	16.96	6.85	1.14
Gas infrared emitters	77,994	5.93	0.71	115.59	46.68	7.78
Gas boiler room	126,320	9.60	1.15	187.20	75.60	12.60
Gas appliances	15,676	1.19	0.14	23.23	9.38	1.56
	Diesel (t)					
Diesel generators ISFS	1.344	1.908	0.026	6.720	1.075	0.153
Diesel generator V1	0.252	0.358	0.005	1.260	0.202	0.028

Diesel generator in FCC production unit does not work non-stop. In 2012, 10 l of diesel oil were used to check the operation capability during one hour testing period and 95 l during endurance testing.

Operating permit for fiber-concrete mixture production was issued by the Municipal Authority in Trnava on 10 March 2010. In 2012, 247 FCC containers were produced, i.e. 1,062.1 tons of fiber-concrete mixture, what presented air pollution by solid air pollutants in the amount of 0.02124 tons.

Trends of air pollutants released to the atmosphere during the period of years 2008 - 2012



BR WTC Incineration Plant - Volumes of air pollutants released during the period of years 2008 - 2012

Air pollutant	2012 (kg)	2011 (kg)	2010 (kg)	2009 (kg)	2008 (kg)
HCl	23.84	0.54	1.05	2	1
HF	0.82	0.113	8.96	11	6
Hg + Tl + Cd	0.054	0.034	0.035	0.02	0.9
As + Ni + Cr + Co	0.29	0.33	0.43	0.3	4
Pb + Cu + Mn	0.24	0.205	0.157	0.08	0.6
SO_2	107	4.05	6.11	5	11
NO_X	62.93	676.66	852.75	1,170	989
CO	17.17	57.93	78.38	93	168
TZL	3.55	5.61	5.23	4	20
C_{org}	11	12.47	14.46	18	29
Number of operation hours	2,671	4,851	5,342	6,143	7,574

EQUIPMENT CONTAINING FLUORINATED GREENHOUSE GASES

The facilities specified in the table were notified to the District Environmental Authority in Trnava and District Environmental Authority in Bratislava. Their operating conditions are governed by the Act No. 286/2009 Coll. on Fluorinated Greenhouses Gases and the Regulation (EC) of the European Parliament and of the Council) No. 842/2006 on Certain Fluorinated Greenhouse Gases.

Units containing more than 3 kg of fluorinated greenhouse gases

Building	Unit	Substance	Total volume (kg)	Number (pcs)	Owner
External switch rooms A1	Compact switch room 110 kV	SF_6	186	2	JAVYS
External switch rooms A1	Measuring current transformer	SF_6	24	6	JAVYS
External switch rooms A1	Measuring voltage transformer	SF_6	26.4	6	JAVYS
Special utility room	Air condition unit	R 410A	8	1	JAVYS
Special utility room	Air condition unit	R 410A	11	1	JAVYS
Administrative building V1	Split unit	R 410A	7.55	1	JAVYS
Administrative building V1	Split unit	R 410A	7.55	1	JAVYS
Administrative building V1	Split unit	R 410A	7.55	1	JAVYS
AC Bratislava	Air condition unit	R 410A	11	1	JAVYS
Health center	Air condition unit	R 410A	8.5	1	JESS
Administrative building	Cooling unit	R 410A	2 x 23	2 cooling circuits	JESS
Administrative building	Cooling unit	R 410A	2 x 23	2 cooling circuits	JESS
Administrative building V1	Split unit	R 407C	3.2	1	JAVYS
Administrative building V1	Split unit	R 407C	3.2	1	JAVYS
Administrative building V1	Split unit	R 407C	4.3	1	JAVYS
Administrative building V1	Split unit	R 407C	4.5	1	JAVYS
Administrative building V1	Split unit	R 407C	3.1	1	JAVYS
Administrative building V1	Split unit	R 407C	3,2	1	JAVYS
AC Bratislava	Cooling unit	R 407C	22	1	JAVYS
AC Bratislava	VRV system	R 407C	11.2	1	JAVYS
AC Bratislava	VRV system	R 407C	6.3	1	JAVYS
AC Bratislava	VRV system	R 407C	6.3	1	JAVYS
AC Bratislava	VRV system	R 407C	11.2	1	JAVYS
AC Bratislava	VRV system	R 407C	11.2	1	JAVYS
Administrative building	Cooling unit	R 407C	15	1	JESS

RADIOACTIVE RELEASES TO ATMOSPHERE

JAVYS nuclear facilities only release small portions of the limits approved for gaseous and liquid releases to the environment, and these are subject to multiple control measurements.

The approved limits for releases guarantee that under standard or specific operating conditions the annual radiation limits for a person - 12 μSv/year for the nuclear installations of RAW PTT and A1 NPP and 20 μSv/year for the nuclear installations V1 NPP are not exceeded as a consequence of overall releases of radioactive substances to atmosphere and hydrosphere. The radioactive releases to the atmosphere and hydrosphere together are assessed.

Limit values for radioactive releases are defined in LaP for individual nuclear installation (RAW PTT, A1 NPP, ISFS, V1 NPP, FP LRW). They are defined in individual decisions issued by the Slovak Public Health Authority and approved by the Nuclear Regulatory Authority of the Slovak Republic.

Gaseous releases of radioactive aerosols (β, γ) in 2012

Nuclear installation	Activity of gaseous effluents	Annual limit	% of annual limit
Aerosols VK 46A (HVB)	1 850.307 kBq	6.58×10^5 kBq	0.281
Aerosols VK 46B (BL and VO)	149.707 kBq	1.41×10^5 kBq	0.106
Aerosols VK 808 (BSC and VO)	514.548 kBq	1.41×10^5 kBq	0.365
Aerosols VK 840 (ISFS)	504.238 kBq	3.00×10^5 kBq	0.168
Aerosols VK V1 NPP	2 816 kBq	8.00×10^7 kBq	0.004
Aerosols FP LRW	250.200 kBq	8.00×10^7 kBq	0.313

Air mass for FP LRW is released to the SE EMO stack (not directly to the environment). The air mass is repeatedly filtrated in the SE EMO equipment and then together with the air mass from SE EMO it is released to the environment.

No radioactive substances were released from NRWR to the atmosphere taking into account characteristics of the repository.

Releases to atmosphere from JAVYS nuclear facilities were deeply below the limits approved by the Slovak Public Health Authority in the year 2012.

WATER MANAGEMENT

In regards to water protection, JAVYS observes the key legislation – the Act of the National Council of the Slovak Republic No. 364/2004 Coll. as amended - „Water Act", as well as all directly or indirectly related laws and regulatory decrees as amended.

Limits for volumes of discharged waste waters, concentration and balance limits of pollutants in wastewater, the place and method of discharge, volume of surface water, etc., are defined in decisions issued for JAVYS by the state and supervisory water management authorities.

DRINKING WATER

In Jaslovské Bohunice site, JAVYS is connected to drinking water pipeline of Trnava Water Utility.

NRWR and FP LRW in Mochovce use SE, a.s.- EMO plant facilities for drinking water supply.

FCC production premises in Trnava are connected to drinking water pipeline of Trnava Water Utilities, drinking water for building in Bratislava is supplied from Bratislava Water Utilities drinking water pipeline.

Drinking Water Consumption during the years 2009-2012

Site	Volume (m^3) of drinking water			
	2009	2010	2011	2012
Jaslovské Bohunice Site	164,413	165,673	176,550	147,897
National RAW Repository (NRWR)	208	243	194	266
FP LRW	275	288	250	215
FCC production unit	1,134	1,467	1,011	731
Administrative center Bratislava	2,218	1,823	1,792	1,237
TOTAL	**168,248**	**169,494**	**179,797**	**150,346**

The overall drinking water consumption in 2012 decreased by 29,451 m^3, that is decrease of the consumption by 16.4 %.

Analysis of drinking water samples

In JAVYS, the quality of drinking water is controlled in terms of the Governmental Regulation No. 354/2006 Coll. as amended, pursuing the requirements for water intended for human consumption and control of quality of water intended for human consumption. In 2012, accredited sampling and analysis of drinking water samples was carried out in Jaslovské Bohunice site in terms of applicable legislation. Test protocol was issued for each analysis. In all cases, analyzed indicators of the analyzed sample were in compliance with the limit values defined in the Governmental Regulation No. 354/2006 Coll.

COOLING WATER

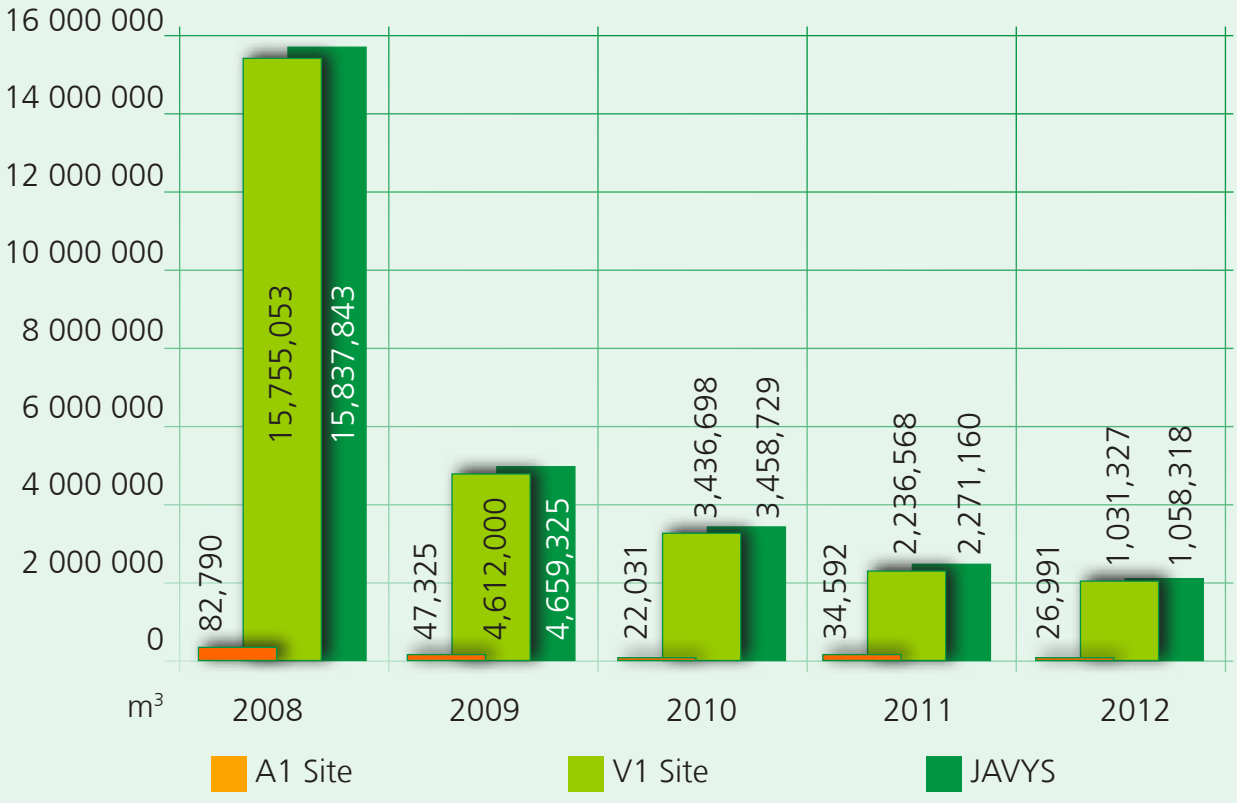
Jaslovské Bohunice Site

Surface water from Sĺňava water reservoir is used for cooling. Cooling water for JAVYS is supplied by SE, a.s., EBO V2 plant.

Surface (raw) water from the Váh River is used for cooling of NPP V1 safety and emergency systems, and for cooling of radioactive waste processing and repository operations. Until the end of the year 2009, SE, a.s., EBO V2 plant supplied water filtered through sand filters in Pumping and filtration station Pečeňady. Since June 2012, water is filtered through sand filters in a new filtration station of raw water V1. Cooling water consumption is decreasing since 2009.

Cooling Water Consumption during the years 2008-2012

Year	Cooling water consumption – water from the Váh River (m³)		
	V1 Site	A1 Site	JAVYS
2008	15,755,053	82,790	15,837,843
2009	4,612,000	47,325	4,659,325
2010	3,436,698	22,031	3,458,729
2011	2,236,568	34,592	2,271,160
2012	1,031,327	26,991	1,058,318



The overall cooling water consumption in 2012 decreased by 1,212,842 m³ compared to year 2011 and it presents decrease of the consumption by 53.4 %.

Mochovce FP LRW

FP LRW technology lines (bituminization plant and thickening evaporator) are linked to pipeline supplying unimportant technical water from SE-EMO distribution pipelines, i.e. to circulating cooling water. Cooling water consumption recorded and measured for invoicing purposes was 18,269 m^3 during the reporting period from January until December 2011. Volume activity is measured non-stop in FP LRW cooling water, and if the defined activity limits are exceeded, the operation is stopped until the source of activity is identified. Active cooling water is then pumped to active wastewater. No increased activity of cooling water was recorded during the reporting period.

WASTEWATER

Jaslovské Bohunice Site

In JAVYS site, the below specified pipelines are operated:

- Rain water pipeline runs into the Dudváh river through open channel Manivier.
- Sewage flows into the wastewater treatment plant – BIOCLAR, and then to the Váh river through SOCOMAN pipelines collector.
- Industrial wastewater – water polluted with crude oil flows into central gravitational oil separator; cleaned water then runs to coagulation unit for supplementary cooling water treatment in SE-EBO.
- Special sewer runs to special tanks collecting active wastewater from individual sites for further processing, which is treated, checked and then discharged (in an organized way).
- The trunk sewage collector SOCOMAN drains other wastewater, including low-radiation wastewater from RAW processing and treatment technology units, to the Váh river.

Discharged Wastewater Balance

Permit No. KÚŽP-1/2006/00273/Fr (No. KÚŽP-1/2008/00582/Gl) to discharge the wastewater from JAVYS, a.s. Jaslovské Bohunice site issued by the Regional Environmental Authority in Trnava was valid until 31 December 2010. Its validity was prolonged by the decision of the Regional Environmental Authority in Trnava - No. KÚŽP-1/2010/00465/Mj. until 31 December 2014 with modified conditions of permit to the recipient - Váh river and with determined conditions of monitoring of amount and quality of discharged wastewater to the recipient Dudváh river at the place of draining the water from retention tanks. In 2012, this condition was fulfilled within the investment project (IPR I00TSND60007) by building a new measuring place - pumping stattion V1 with measurement of quantity and monitoring of quality of wastewater discharged from the retention tanks into the recipient of Dudváh river (through Manivier channel). These changes and changes in the values of permitted volume of wastewater discharged to the Dudváh river were permitted by the decision of the Regional Environmental Authority in Trnava No. AF1/2012/461/Mj of 28 September 2012. Change in permitted limits for the activities of radionuclides discharged in wastewater from V1 NPP to Váh and Dudváh rivers was issued by the decision No. KÚŽP-1/2011/00451/Gl. In connection with decommissioning of V1 NPP the annual values of tritium discharged to the rivers Váh and Dudváh were decreased for 1 class in comparison with the previous decision.

KŠP and ^3H volume activity is monitored in wastewater discharged from JAVYS site, as well as chemical pollution indicators defined in the respective decisions issued for the company.

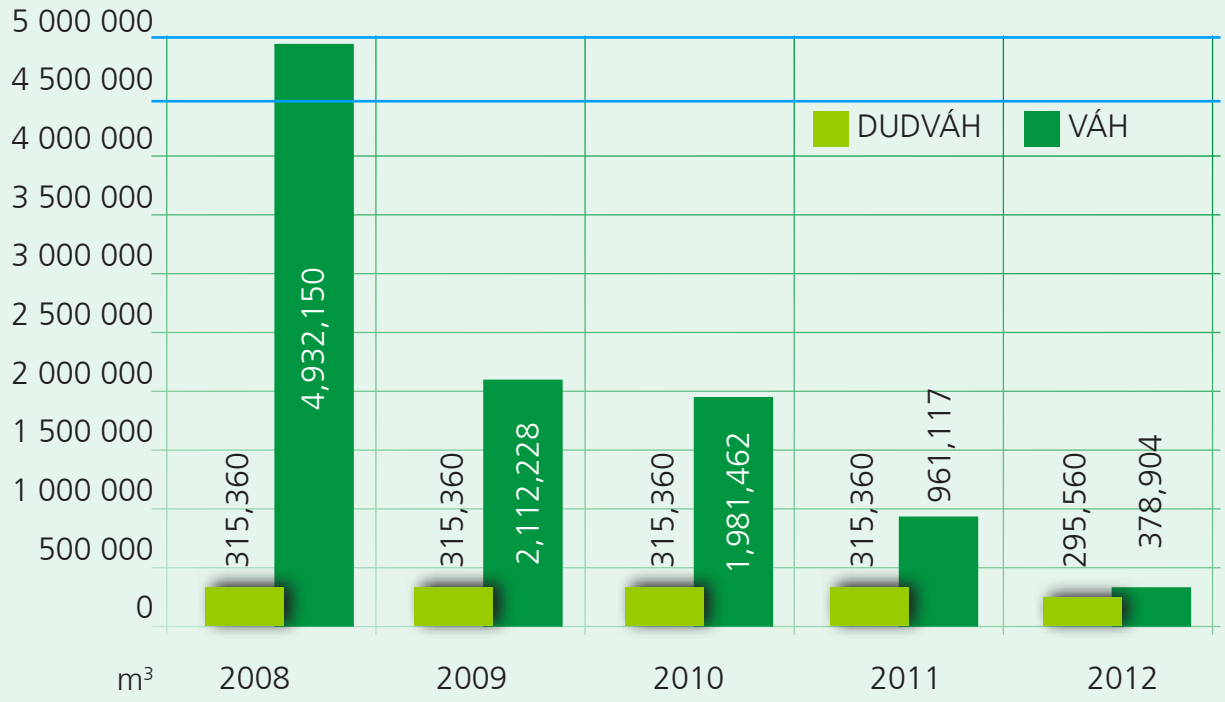
No approved pollutant limits were exceeded during the reporting period in wastewater.

Volume of discharged wastewater to the recipients Váh and Dudváh rivers during the period of years 2008 - 2012

Volume of wastewater discharged from JAVYS (m^3)					
Recipient	**2008**	**2009**	**2010**	**2011**	**2012**
Váh	4,932,150	2,112,228	1,981,462	961,117	378,904
Dudváh	315,360	315,360	315,360	315,360	295,560

Volume of discharged wastewater to the recipients Váh and Dudváh rivers during the period of years 2008 - 2012

Volume of wastewater discharged from JAVYS (m³)



Average concentration of chemical pollutants discharged to the recipient Váh river

Chemical indicators of pollution	Average concentration of the discharged pollution (year 2012)	Maximum concentration limit (Decision No. 1/2006/00273/Fr issued by the Regional Environmental Authority (KÚŽP)
mg/l	mg/l	mg/l
Acidity, alkalinity - pH	7.734	9.00
Biochemical oxygen consumption -BSK_5	2.935	8.00
Chemical oxygen consumption – $CHSK_{Cr}$	10.847	30.00
Insoluble solids - NL	14.667	20.00
Soluble solids - RL	390.750	1,000.00
Ammonia – N-NH_4^+	1.217	4.00
Nitrates – NO_3^-	20.885	50.00
Sulphates – SO_4^{2-}	27.958	150.00
Chlorides – Cl^-	24.126	100.00
Non-polar extract. solids - NEL	0.027	0.35
Total phosphate – $P_{celk.}$	0.479	2.00
Iron – Fe	0.109	2.00
Hydrazine hydrate – N_2H_4	0.000	not stated
Detergents - PAL	0.049	0.50

Average concentration of chemical pollutants discharged to the recipient Dudváh river

Chemical indicators of pollution	Average concentration of the discharged pollution (year 2012)	Maximum concentration limit (Decision No. 1/2006/00273/Fr issued by the Regional Environmental Authority (KÚŽP)
(mg/l)	mg/l	mg/l
Acidity, alkalinity - pH	8.3083	9.00
Chemical oxygen consumption – $CHSK_{Cr}$	16.5000	30.00
Insoluble solids - NL	17.1667	40.00
Soluble solids - RL	308.000	1,000.00
Sulphates – SO_4^{2-}	62.008	150.00
Chlorides – Cl^-	20.306	100.00
Non-polar extract. solids - NEL	0.022	0.35
Total phosphate – $P_{celk.}$	0.185	2.00
Iron – Fe	0.260	2.00
Hydrazine hydrate – N_2H_4	<0.020*	2.00

* value of N_2H_4 indicator is below the detection limit of the measuring device by a method of atomic emission spectrometry with inductively bound plasma. N_2H_4 is not discharged into the wastewater; the company JAVYS has not been using N_2H_4v since the second half of the year 2010.

NRWR Mochovce

NRWR Mochovce rain water pipeline runs through rain water collection tanks to the Telinský creek.

The Chief hygienist of the Slovak republic issued a decision No. OOZPŽ/6573/2011 for the company JAVYS, approving activities leading to radiation, which also include "activity limits for radionuclides released to water from surface water running from NRWR Mochovce". The decision concerning discharge of surface water was issued by the Environmental Department of the Regional Authority in Nitra. In 2012, 3,405 m^3 of surface water was discharged to the Telinský creek from NRWR.

FP LRW Mochovce

Sewage water from FP LRW runs to the SE-EMO sewer that leads to wastewater treatment plant, and after treatment it is discharged to environment together with other SE-EMO water.

The volume of rain water is calculated from the overall FP LRW building roofs surface and annual rainfalls (1,7 mm/day). Rainwater runs to SE-EMO rain water pipeline together with other rain water caught in other SE-EMO buildings. Rain water is collected in retention basins, measured, and then discharged to the environment.

Rain water and sewage services are managed by the company Slovenské elektrárne.

RADIOACTIVE RELEASES TO HYDROSPHERE

JAVYS nuclear facilities only release small portions of the limits approved for liquid releases to the environment, and these are subject to multiple control measurements.

The approved limits for releases guarantee that under standard or specific operating conditions the annual radiation limits for a person - 32 μSv/year from all nuclear installations in Jaslovské Bohunice site are not exceeded as a consequence of overall releases of radioactive substances to atmosphere and hydrosphere. The radioactive releases to the atmosphere and hydrosphere together are assessed.

Limit values for radioactive releases to the surface water are defined in LaP for nuclear installations of the company JAVYS (RAW PTT, A1 NPP, ISFS, V1 NPP, NRWR, and FP LRW). They are defined in decisions issued by the Slovak Public Health Authority and approved by the Nuclear Regulatory Authority of the Slovak Republic.

Volume activity of tritium and corrosive and fission products is measured to check the activity of released wastewater, as well as the volume of water in collection tanks for RAW PTT, A1NPP, ISFS and V1 NPP; discharging of water is also monitored by continual monitoring in the measuring objects. Low-radiation water is discharged together with water pumped out during the standard operation of remediation pumping of underground water from the drill N° N-3 (SO 106) that is governed by the permit issued by the Regional Authority in Trnava under the Water Act No. 364/2004 Coll.

Discharge of low-activity water from Jaslovské Bohunice area (including water from remediation pumping from RAW PPT and A1 NPP site) to the recipient Váh river

2012	Activities of radionuclides in wastewater to the recipient Váh river							
	V1 NPP and ISFS				RAW PPT and A1 NPP			
	Corrosive and fission products (MBq)	Tritium (GBq)	% KŠP limit utilization*	% ^{3}H limit utilization*	Corrosive and fission products (MBq)	Tritium (GBq)	% KŠP limit utilization**	% ^{3}H limit utilization**
Total	12.505	8.052	0.096	0.403	84.743	228.934	0.706	2.289

* KŠP limit is 13,000 MBq; tritium limit is 2,000 GBq (as of 20 July 2011)

** KŠP limit is 12,000 MBq; tritium limit is 10,000 GBq

Discharge of non-active water from Jaslovské Bohunice site to the recipient Dudváh river

2012	Activities of radionuclides in wastewater to the recipient Dudváh river							
	V1 NPP and ISFS				RAW PPT and A1 NPP			
	Corrosive and fission products (MBq)	Tritium (GBq)	% KŠP limit utilization	% ^{3}H limit utilization	Corrosive and fission products (KŠP) (MBq)	Tritium (GBq)	% KŠP limit utilization*	% ^{3}H limit utilization*
Total	0	0	0	0	0.604	0.001	0.503	0.002

* KŠP limit is 120 MBq; tritium limit is 37 GBq

In 2012, very low active surface (rain) water was discharged to the recipient Dudváh from implementation of the program PRG-82/5110/A1/2009 „Program for collection, sorting and management of waste from the pool of low active soil repository". Discharged volume of rain water is 63 m^3 in 2012.

Active discharges into the hydrosphere from NRWR and FP LRW

Only surface water was discharged from NRWR, and no limit indicators of discharged water were exceeded during the reporting period. The measured values (^{3}H, ^{60}Co, ^{137}Cs, ^{90}Sr, $^{239+240}Pu$) were ranging around detection limits.

Water in the volume of 3,405 m^3 and with the overall activity of 1.44×10^7 Bq. were discharged into the hydrosphere, i.e. into Telinský creek.

The table contains percentage assessment of total activity of separate radionuclides in 3,405 m^3 of discharged volume from the surface to LaP. Limits of volume activity of the radionuclides in discharged water defined in the decision of the Chief Hygienist of the Slovak Republic were not exceeded in any indicator.

Data about quality of discharged rain wastewater from NRWR

Radionuclide	Release activity (Bq)	Annual limit (Bq)	% of annual limit
^{3}H	1.248×10^7	1.88×10^{10}	0.066
^{137}Cs	1.019×10^6	2.28×10^7	4.470
^{60}Co	7.98×10^5	2.24×10^7	3.562
^{90}Sr	1.30×10^5	2.44×10^8	0.053
^{239}Pu	5.00×10^3	5.56×10^5	0.893

Two types of secondary radioactive liquid waste is generated in FP LRW. These active media (wastewater, vapor condensate) are not released to the environment (active releases) and are pumped to SE-EMO for further treatment and processing.

Data about quality of discharged secondary active wastewater from FP LRW to SE-EMO

Radionuclide	Wastewater V = 95,16 m^3	Vapor condensate V = 233,41 m^3	Activity total	Annual limit Bq	% of limit
Tritium (Bq)	2.63×10^9	23.67×10^9	26.3×10^9	3.0×10^{11}	8.77
Corrosive and fission products (Bq)	1.06×10^9	2.05×10^9	3.11×10^9	3.9×10^9	79.75

Note: Wastewater and vapor condensate are cleaned in SE-EMO, i.e. that contributions in the discharge to the environment are even lower.

In 2012 the company JAVYS did not exceed the limit for tritium activity in the discharged water and parameters of other corrosive and fission products in wastewater were below the set approved limits.

UNDERGROUND WATER MONITORING AND PROTECTION

RAW PPT and A1 NPP site

Monitoring and protection of underground and soil water in Jaslovské Bohunice and its surroundings has been performed since 1997 according to approved monitoring program.

Radiation in underground waters within RAW PPT and A1 NPP site is stabilized at the moment; long time and regular monitoring is in place. Since 2000, there is ongoing remediation pumping system in operation.

Activities to gradually remove soil and subsequently underground water contamination sources are performed within the A1 NPP decommissioning project.

Independent study was prepared entitled "The need of remediation pumping in NPP A1 site" in order to assess the efficiency and suitability of underground water remediation pumping (drill N-3), which recommended to continue with the non-stop remediation pumping of underground water without any further adjustments in the approach already applied.

Assessment of standard operation of underground water remediation pumping from the drill N-3

Remediation year 2012	Spent KŠP activity (MBq)	KŠP limit utilization (%)	Spent tritium activity (GBq)	^{3}H limit utilization ** (%)	Volume of pumped water (m^3)
Total	5.09	0.042	70.71	0.707	196,363.09

* the values in column „limit utilization" are those defined in the respective Decision; KŠP limit = $1{,}2.10^4$ MBq, ^{3}H limit = $1{,}0.10^4$ GBq)

Besides monitoring inside the company premises, also the surrounding environment is monitored. Based on underground water monitoring results around Jaslovské Bohunice site, significant improvement of radiation situation may be noted near the villages of Malženice and Žlkovce (tritium volume activity lowered to insignificant level reaching the background values).

NRWR Mochovce site

There are 52 monitoring drills (underground water) within and around NRWR from which samples were taken in accordance with the approved time schedule in 2012, and then chemical and radiochemical analysis were made.

Besides underground water, also drainage water is monitored in NRWR, where volume activity of separate radionuclides in 2012 was below the limits approved by the Chief Hygienist of the Slovak Republic in the Decision No. OOZPŽ/66573/2011.

Drainage water is discharged through rain water collection tanks and its amount and analysis are included in the discharged water.

Results of chemical and radio-chemical analysis of water

Measured parameter	Activity value (Bq/l)
^{3}H	< 5
^{137}Cs	< 0.60
^{60}Co	< 0.92
^{90}Sr	< 1
^{239}Pu	< 0.06

The results of radiochemical measurements show only background values, and no adverse environmental impacts were recorded during the operation in NRWR or its surroundings.

WASTE MANAGEMENT (NON-ACTIVE WASTE)

In regards to waste management (non-active waste), the company JAVYS observes the key legislation – the Act of the National Council of the Slovak Republic No. 223/2001 Coll. on waste as amended, as well as all directly or indirectly related laws and regulatory decrees as amended.

Jaslovské Bohunice Site

Waste management means to collect, sort and store waste in premises assigned for those purposes – the waste collection center. Wastes belonging to the "hazardous" waste category are temporarily stored in adequate and appropriately secured premises in order to avoid any adverse impacts or danger to life and health of people, their assets and the environment.

The wastes generated in JAVYS result directly and also indirectly from its activities.

In 2012, the company JAVYS generated wastes categorized as "other" (O) and "hazardous" (H) according to the Waste Catalogue – the Decree of the Ministry of Environment of the Slovak Republic No. 284/2001 Coll.; municipal and biodegradable waste.

Volume and types of other waste generated in 2012

Catalogue no.	Type of waste	Waste characteristics	Volume (kg)	Reused (kg)	Disposed (kg)
150101	O	Mixed paper	980	✓	
150102	O	PET plastic packaging	260	✓	
150106	O	Mixed packaging	7,880		✓
160214	O	Discarded devices - measuring devices	4,100	✓	
170101	O	Concrete	293,682		✓
170402	O	Aluminum	112,289	✓	
170401	O	Copper, bronze and brass	390	✓	
170405	O	Iron and steel (stainless)	6,680	✓	
170407	O	Iron scrap - light	313,060	✓	
170604	O	Insulation materials other than those mentioned in 170601and 03	118,260		✓
170411	O	Cables-aluminium made	810	✓	
Total volume (kg)			**858,391**	**438,569**	**419,822**
Total volume (%)			**100 %**	**51.1 %**	**48.9 %**

Volume and types of hazardous waste generated in 2012

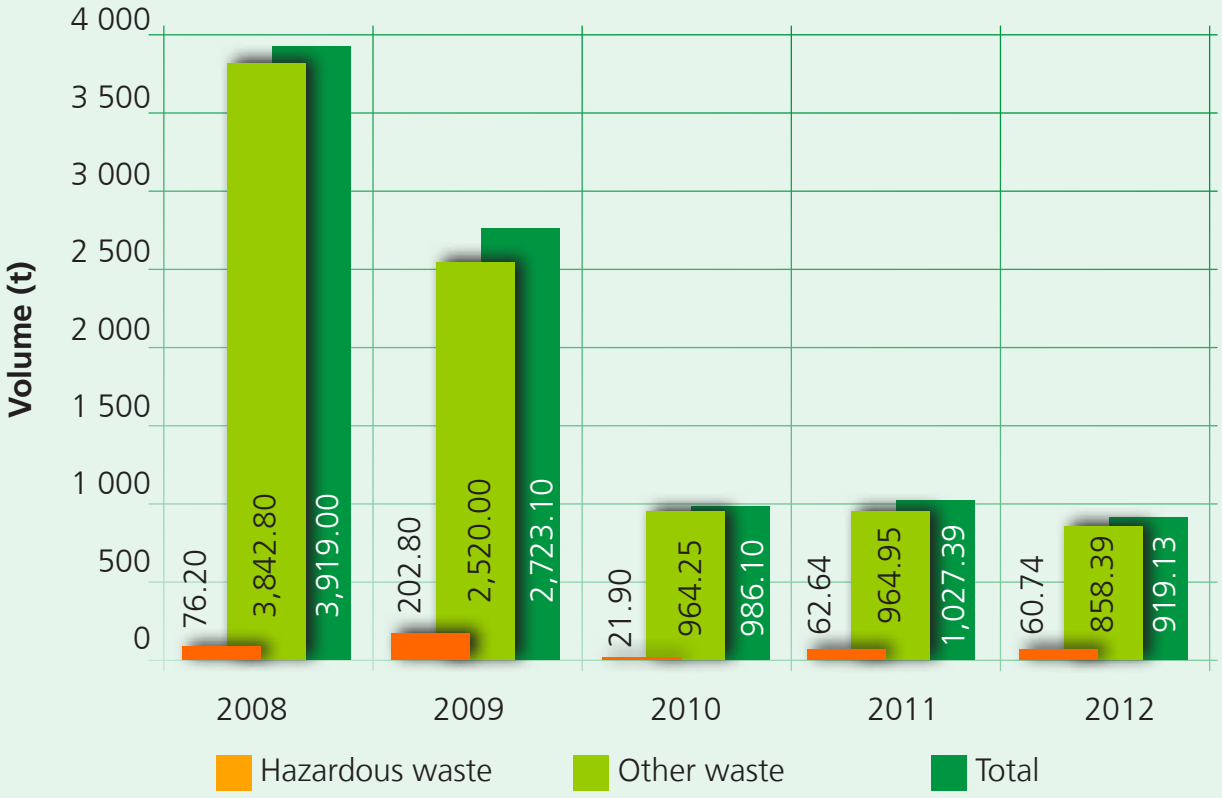
Catalogue no.	Type of waste	Waste characteristics	Volume (kg)	Reused (kg)	Disposed (kg)
080317	H	Discarded toner	650	✓	
090104	H	Solutions of fixing agents	430	✓	
130507	H	Oily water	19,930	✓	
150110	H	Packaging containing dangerous substances	1,380		✓
160213	H	Discarded equipment containing dangerous particles - fluorescent lamps	1,130	✓	
160601	H	Lead batteries	1,250	✓	
160602	H	Nickel-cadmium batteries	250	✓	
160708	H	Waste containing oil	21,750	✓	
180108	H	Cytot. and cytost. medicaments	190		✓
191206	H	Wood containing dangerous substances	13,780	✓	
Total volume (kg)			**60,740**	**59,170**	**1,570**
Total volume (%)			**100 %**	**97.4 %**	**2.6 %**

The overall volume of generated other waste is lower by **106.56 tons** compared to the year 2011; and lower by **1.9 tons** lower in case of hazardous waste.

Volume of municipal and biodegradable waste generated in 2012

Catalogue no.	Type of waste	Waste characteristics	Volume (kg)	Reused (kg)	Disposed (kg)
200301	O	Mixed municipal waste	56,350		✓
200201	O	Biodegradable waste	80,910	✓	
Total volume (kg)			**137,260**	**80,910**	**56,350**
Total volume (%)			**100 %**	**58.9 %**	**41.1%**

Volume of other and hazardous waste generated in the period of 2008 - 2012



Waste disposal and recycling is supplied by companies that were granted relevant permits and authorizations to dispose of individual types of waste. Municipal waste is disposed by the respective municipalities (Trnava, Bratislava, Jaslovské Bohunice) in compliance with their generally binding regulations.

Mochovce site

0.276 tons of municipal waste and 120 m^3 of waste from cleaning of septic tanks were generated in Mochovce site from NRWR and FL PWR nuclear facilities during the reporting year.

SE-EMO is in charge of wastes disposal and transportation from Mochovce site.

MAJOR INDUSTRIAL ACCIDENTS

The company JAVYS observes the key law concerning the major industrial accidents – the Act No. 261/2002 Coll. on Prevention of Major Industrial Accidents as amended, as well as all directly and indirectly linked regulations and legislation as amended.

Classification of JAVYS in regards to the valid legislation governing the major industrial accidents (ZPH)

Since 2011, on the basis of volume of collected dangerous substances, the company Jadrová a vyraďovacia spoločnosť is exempted from the „A" category under the Art. 5 of the Act No. 261/2002 Coll. on Prevention of Major Industrial Accidents and on Supplements and Amendments to Certain Acts.

Despite of its exemption from the „A" category, in terms of the Act. No. 261/2002 Coll., the company is obliged to monitor volume, fire characteristics and type of present VNL in the plant regularly and in case that it is necessary to change its classification, to send a new notification to the District Environmental Authority.

Inspections and Controls

On 28 June 2012, the Circuit Environmental Authority Levice executed a state inspection of prevention of major industrial accidents in FP LRW site, Mochovce locality. This inspection focused on meeting the provisions of the Art. 4 and 5 of the Act on Prevention of Major Industrial Accidents. They inspected the period from putting this site into operation (i.e. from 1 June 2009) until the date of inspection.

In the inspection report, the District Environmental Authority stated that present selected hazardous substances are managed under strict safety and emergency measures that prevent any leakages outside the storage tanks, emergency tanks or other technological objects, and so probability of major industrial accident occurrence in the inspected premises is very low.

Regarding the small volumes of VNL present in the inspected site, only provisions of the Art. 4, sect 4 and 10 of the Act on prevention of major industrial accidents applies to FP LRW site (i.e. to verify total amount of VNL present in the site and to categorize the site; in case of each change, fire characteristics or type of present VNL that could cause change of the categorization of the site, to verify correctness of this categorization and in case of the need to execute change of the categorization, to send a new notification to the District Environmental Authority without undue delay).

The executed inspection of the company JAVYS - FP LRW site in Mochovce did not detect any irregularities or insufficiencies in the section of prevention of major industrial accidents.

ENVIRONMENTAL IMPACTS ASSESSMENT PURSUANT TO THE ACT NO. 24/2006 COLL.

Regarding the environmental impacts assessment, the company JAVYS observes the key law - Act of National Council of the Slovak Republic No. 24/2006 Coll. on „Assessment of Impacts on the Environment and on Supplements and Amendments to Certain Acts", as amended. In terms of requirements of this act, the processes of environmental impacts assessments of new proposed activities categorized according to Annex 8 of the act and of assessments of changes of the existing activities are executed based on Notification of a change of the proposed activity.

Assessment processes of environmental impacts in the locality Jaslovské Bohunice

In 2012, several BIDSF projects were in different stages of the process of the environmental impacts assessment in the locality of Jaslovské Bohunice. C7-A2 „Increasing Capacity of Existing Fragmentation and Decontamination Facilities", C7-A3 „Erection of a New Large Capacity F&D Facility V1 NPP", B6.7 „Environmental Impact Assessment Report of 2nd Stage of V1 NPP Decommissioning", and the activity of RAW PPT „Assessment of existing technologies on RAW processing and treatment".

In 2012, the Ministry of Environment of the Slovak Republic issued the final opinion for a new proposed activity - C8 project - „Interim Storage of RAW at Bohunice Site".

Assessment processes of environmental impacts in the locality Mochovce

In the locality Mochovce, the existing activities - „Completion of the existing repository for disposal of low level waste and erection of a repository for disposal of low level waste" and „FP LRW in Mochovce" were in different stages of the process of assessment of their impacts on the environment in 2012.

In 2012, the Ministry of Environment of the Slovak Republic issued the final opinion for a new proposed activity - C8 project - „Facility for IRAW and CRAM Management in the locality of Mochovce".

For more information regarding the processes of the environmental impacts assessment, please, visit the website of the company JAVYS and information system EIA/SEA.

ENVIRONMENTAL MANAGEMENT SYSTEM

„Environmental Management System“ (EMS) is one of the progressive management tools JAVYS applies for environmental protection. It is implemented and certified under ISO 14001:2004 standard - „Environmental Management Systems. Requirements and Instructions for Use.“ Environmental policy and goals of the company are directed towards ongoing enhancement of its environmental behavior and adherence to the environmental pollution prevention obligation.

Since its establishment in 2006, the company JAVYS is successful to fully adhere to the standard requirements, which is also confirmed by internal audits by DNV company and documented by the Environmental Management System certificate. Periodical and re-certification audits prove the fact that JAVYS deserves to own the EMS Certificate.

From 12 to 16 November 2012, the certification ISM audit was performed, within which the environmental management system of the company JAVYS was re-certified. Subsequently, a new EMS certificate, No. 126787-2012-AE-CZS-RvA was issued. Zero findings identified as major and small insufficiencies are an important efficiency indicator in enhancing the EMS introduced and operated in JAVYS.

LIST OF ABBREVIATIONS

As	arsenic
Bq	bequerel
BIDSF	Bohunice International Decommissioning Support
BL	Bitumenization line
BSC RAO	Bohunice Radioactive Waste Treatment Centre (BR WTC)
$C_{org.}$	Organic carbon
Cd	Cadmium
CO	Carbon dioxide
Co	Cobalt
Cr	Chromium
CRAM	Captured Radioactive Materials
Cu	Copper
EIA	Environmental impact assessment
EMS	Environmental management system
EU	European Union
FS KRAO	Final Processing of Liquid Radioactive Waste (FP LRW)
GBq	Gigabequerel
HCl	Hydrogen chloride
HF	Hydrogen fluoride
Hg	Mercury
HVB	Power block
IRAO	Institutional RAW (IRAW)
ISM	Integrated management system
JAVYS	Jadrová a vyraďovacia spoločnosť, a.s.
JESS	Jadrová energetická spoločnosť Slovenska, a.s.
JE A1	A1 nuclear power plant (A1 NPP)
JE V1	V1 nuclear power plant (V1 NPP)
KÚ ŽP	Regional Environmental Authority
KŠP	Corrosive and fission products
LaP	Limits and terms
MBq	Megabequerel
Mn	Manganese
MSVP	Interim Spent Fuel Storage (ISFS)
MŽP SR	Ministry of the Environment of the Slovak Republic
NAO	low level waste
NaRK	Auxiliary boiler plant
Ni	Nickel
NL	Hazardous substance
NOx	Nitrate oxides
NV SR	Ordinance of the Government of the Slovak Republic
OÚ ŽP	District Environmental Authority
Pb	Lead
P_{Celk}	Total phosphorus
RAW	Radioactive waste (RW)
RÚ RAO	National Radioactive Waste Repository (NRWR)
SO_2	Sulphur dioxide

SE-EBO	Slovenské elektrárne, a.s., Bohunice NPP
SE-EMO	Slovenské elektrárne, a.s., Mochovce NPP
SIŽP	Slovak Environmental Inspection
TBq	terabequerel
Tl	Tellurium
TSÚ RAO	Radioactive Waste Processing and Treatment Technology (RAW PTT)
TZL	Solid pollutants
ÚVZ SR	Public Health Authority of the Slovak Republic
VK	Ventilation stack
VNAO	low level waste
VNL	Selected hazardous substances
VO	External objects
VVBK	Production of fiber-concrete container (FCC)
ZPH	Major industrial accidents
ŽP	Environment

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